

The Problem of Measuring SES on Educational Assessments

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The problem of measuring SES on assessments

Much attention has been given to the effects of SES on achievement and educational attainment, particularly during the last half of the 20th century. Recognition that achievement tends to vary by socioeconomic status became policy in the form of the No Child Left Behind Act. The No Child Left Behind Act (NCLB) of 2002 ushered in a new era for U.S. schools. Schools are faced with increasingly stringent achievement goals, not only for their student populations as a whole, but across subgroups. One of these subgroups is the “economically disadvantaged” (Rhode Island Department of Elementary and Secondary Education, 2004) which is often measured by eligibility for free and reduced lunch. Within states, NCLB requires steady improvements in achievement within these subgroups, thus requiring states to report achievement by socioeconomic status.

Though there has been much debate about the merits of NCLB and the standardized tests that have become increasingly emphasized (Kohn 2001 provides a call to arms against standardized tests), the links between socioeconomic status and achievement have been well established. Socioeconomic status will remain an important background variable for researchers and thus they should be provided with the best possible measures. Unfortunately, the current measures that are used often have many problems. Above and beyond the statistical concerns regarding validity in measurement, on a practical level, if one is going to ensure that economically disadvantaged groups are progressing, researchers need to ensure that they are identifying all members of the groups.

The current measures of SES on some large scale assessments and that are used by researchers in other contexts are problematic. On a national level, NCLB requires NAEP results to be reported by socioeconomic status of students, however, NAEP does not have a parental

questionnaire which would enable researchers to gather this information directly from students' parents and guardians. Similarly, international assessments such as TIMSS or PISA do not use parent questionnaires. Thus, reports of socioeconomic status either have to come from the students themselves or from a proxy measure such as free and reduced lunch. Much research has been done investigating the links between family socioeconomic status and educational attainment, and the links between school effects and achievement (Buchmann, 2002). There has also been much research done on measuring the socio-economic status of adults (Buchmann, 2002; Duncan & Peterson, 2001; Hauser & Warren, 1997; Smith, 1994). What has not been addressed as rigorously is how to assess the socioeconomic status of the child when their parents can not be queried. A key part of the problem is the need to balance the very real concerns of cost and obtrusiveness with the need to collect valid data.

In this article, we review some of the ways socioeconomic status has been measured on assessments and the issues associated with measuring SES of students, issues which are not limited to statistical concerns. We also present possible proxy measures that could be used as a means of potentially overcoming some of the problems with current measures of SES. Any proposed measures would need to be tested for validity and reliability so we also present elements for a study assessing the construct validity of aggregate measures of SES as proxies for student SES on assessments. We use NAEP and TIMSS as examples, however, these approaches could be applied to other assessments and research contexts.

Current Measures of SES on Assessments

Among researchers there is some consensus that measures of socioeconomic status should be comprised of three theoretical concepts: educational attainment, occupational status, and financial resources (Baer, Baldi, & Merola 2005). Currently, a common measure of

socioeconomic status used by educational researchers is eligibility for free and reduced price lunch. This has been used by researchers in a variety of contexts, not just on assessments (Kurki, Boyle, & Aladjem, 2005) and could be considered a proxy measure either for poverty or financial resources. This measure suffers from a variety of problems. The use of the federal free and reduced price lunch program as a proxy for poverty has been attacked because enrollment rates are low, they decline with grade level, and because the eligibility requirements are based on crude measures of income and family size (Hauser & Carr, 1995). In addition, data on relative pecuniary indicators such as the poverty level or participation in the free or reduced priced lunch program are problematic because definitions and criteria for inclusion may change over time, making comparisons difficult. Some scholars also maintain that the threshold levels for relative indicators fail to sufficiently capture people in the lower end of the SES spectrum (Hauser, 1994). Additionally, students classified as eligible may actually not be, due to a rule that if a certain percentage of students in a school are eligible the school is allowed to make all students eligible.

Aside from the issues of how to determine eligibility, even if all students who are indeed eligible are enrolled and standards didn't change over time, the measure would still have problems. Free and reduced price lunch only measures one dimension of socio-economic status and does not capture the full range of financial resources available to all students in a population. The free and reduced lunch measure fails to provide information about students whose families are in the middle and upper ends of the income distribution. Similarly eligibility for free and reduced price lunch, since it is a threshold measure and students whose families are at 185% of the poverty level are eligible, individual students that qualify for this program could be at very different income levels from each other (Kurki et. al, 2005). So arguably, even if it were not

degrading as a measure due to the problems with reporting and declining enrollment rates, it would not be a fully valid measure of SES.

Eligibility for free and reduced price lunch does have the benefit of being an unobtrusive measure of SES, allowing researchers to avoid the thorny issue of asking students about the socioeconomic status of their families. Some researchers are able to ask parents about their family's socioeconomic status and in this case they can draw on the extensive research that has been done on quering adults about their socioeconomic status. Researchers have developed some guidelines for questions that should be administered to families (primarily to parents) to assess family socioeconomic status in research on child development (Entwisle & Astone, 1994; Hauser 1994). Hauser (1994) and Entwisle and Astone (1994) disagree about the usefulness and ease of gathering occupational information. Hauser (1994) and Entwisle and Astone (1994) do agree, however, that asking about financial resources is problematic. Duncan and Peterson (2001) address the question of gathering financial information from families and disagree with Hauser (1994) and Entwisle and Astone (1994) that it is problematic, however, they don't address the issue of gathering financial information from students when the parents can not be queried. Studies of student achievement also vary in the extent to which they address these facets of SES, with some only measuring one or two facets (Buchmann, 2002).

Some large scale assessments use measures that have questionable validity and/ or don't address all the facets of SES. Currently, NAEP collects data on two of the three SES dimensions: educational attainment and financial resources. These constructs are measured on NAEP through student reports of the educational attainment of their parents and information from schools about whether sampled students participate in the federal free and reduced price lunch program. TIMSS asks about parents education and assets as a proxy for financial resources.

Though this approach is consistent with that used in other assessments (Buchmann, 2002) concerns have been raised about the data collected from measures that query the students about their family's socio-economic status.

One of the arguments is that student reports of the educational attainment of their parents may be inaccurate, especially among younger children. There is also concern over the intrusiveness of asking students about the educational attainment of their parents. In the context of NAEP, posing questions to students about the educational attainment of their parents and gathering data from schools about free and reduced price lunch participation may be inconsistent with NAGB guidelines about avoiding intrusive questions on NAEP. This problem is not simply an American phenomenon. International assessments such as TIMSS have faced the problem of some countries not allowing questions about parental occupation and wealth.. Limiting the measurement of socio-economic status to financial resources and educational attainment also means that the occupational status facet of the socioeconomic status construct is not being addressed.

In sum, as researchers we are faced with measures of socio-economic status on some large scale assessments do not fully measure the construct of SES and data collected from the measures that may be of questionable validity. Indeed, in the case of free and reduced price lunch, the measure may be degrading. Concurrently, there has been a call for reporting achievement by SES, though the current measures may not be up to the task. If achievement is going to accurately and (detailed) reported by SES, better measures of SES must be developed.

Measuring Socio-economic Status

The individual components of SES, (educational attainment, occupational status, and financial resources) have been extensively researched and discussed over time, in conjunction

with how these facets can be combined to make a composite measure of SES. (Baer, Baldi, & Merola 2005). However, researchers seem to differ on what components they use in their analyses (Buchmann 2002 provides some good examples). Indeed, some researchers prefer to look at the facets of SES individually to determine how much each component contributes to any observed effects. Since any composite is only as good as the components that make it up, making sure that the individual components are measured correctly is (key). Over time and extensive research, some broad guidelines that have been developed for measuring the educational attainment, occupational status, and financial resources of adults. .

Educational Attainment

Educational attainment is generally measured in one of two ways within the sociological literature: (a) asking parents how many years of education they have completed or (b) asking them about the highest degree they have attained (allowing options for people who pursued but did not complete a degree) (Smith, 1994). Given that eligibility for many jobs is contingent on the completion of a degree and that personal prestige often changes upon completion of a degree, the second option may be a better measure. Research into the advantages of using either the number of years of education or the highest degree attained as a measure of educational attainment indicate that highest degree tends to have a higher association with SES, in particular with income and occupational prestige (Smith, 1994).

An issue with some international surveys is to make levels of schooling comparable across countries. This has led to the development of the International Standard Classification of Education (UNESCO1997) and the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) (Mueller & Karle, 1993) These scales allow for comparability across

countries. Though these may be better measures of education for the assessing of SES, they still don't address whether students can actually answer the questions or not.

Occupational status

Virtually all composite measures of SES draw on occupational data as a key construct in defining the indicator (Nam, 2000). To develop a complete picture of a respondent's working life one must know the respondent's occupation, occupational status (i.e., self-employed vs. working for someone else), and employment sector (i.e., government, private industry, etc.) (e.g., Kreiger et. al, 1997; Hauser & Warren, 1997). Typically, open-ended questions are used to gather this information and there is agreement about the need to ask multiple questions to get the best data (Hauser, 1994; Entwisle & Astone, 1994). These questions, which ask respondents about their occupations and the industries in which they work, tend to have low rates of refusal and non-response because respondents perceive little risk in providing this information (Hauser & Warren, 1997). This approach is used by such surveys as the General Social Survey, United States Census, the Panel Study of Income Dynamics, the 1992 National Adult Literacy Survey, and the 1998 National Educational Longitudinal Study.

Transferring this approach from adults to students may present a problem. There have been concerns about confidentiality (Buchmann, 2002) and whether students can accurately answer these questions (Entwisle & Astone, 1994). As indicated earlier, TIMSS does not have an occupation question because some countries prohibit it (Buchmann, 2002). As a compromise, some categorical questions have been created that older students can answer (Stricker...) This multiple choice format also didn't conform to recommendations about gathering occupational data.

The Program for International Student Assessment (PISA), which is an international assessment given to 15-year olds, in 2000 did use open ended response questions which were subsequently tested in four of countries to see if students could answer the questions. Validity studies were conducted in Canada, the Czech Republic, France and the United Kingdom to test the reliability of student answers to the questions on their parents' occupations. These studies found a correlation of between .70 and .86 between the students' responses and the parents' responses to the open-ended occupational questions. This was considered high since the test/retest correlation of parents who were asked about their occupations on two occasions was in this range. (Adams & Wu, 2002)

Hauser (1994) also indicates that students ages 14 and 15 can answer these occupational questions about as well as adults. It's unclear though whether younger students can answer these questions and more research needs to be done in this area.

Financial Resources

The financial resources available to families and households may be characterized in terms of earned income, assets, or total wealth (income plus assets, minus debt), though income often receives more attention by social scientists. There is some debate, however, about respondents' abilities to answer questions about income and wealth. Some argue that unlike their reactions to questions dealing with occupational status, respondents may be far more likely to refuse to answer questions about their financial resources (Hauser & Warren, 1997; Entwisle & Astone, 1994). Furthermore, surveys that query respondents about income are time-consuming and difficult to conduct, both because many participants are reluctant to report their income and because income may fluctuate rapidly over time (Hauser, 1994; Krieger et. al., 1997). In addition, the data tend to suffer from poor recall and unreliability (Hauser & Warren, 1997).

Duncan and Peterson (2001) argue, however, that by both creating questions that are conceptually appropriate and instituting proper interviewing techniques and ways of easing respondents burdens, income data can be collected without nonresponse or validity problems.

Though there is some debate about the ability to obtain valid data, measuring financial resources is important because such resources are a direct means of acquiring goods and services; moreover, we concur with Duncan and Peterson (2001) that financial resources are best characterized by the total wealth a family possesses. As noted above, wealth is considered to be the *net* value of income plus assets, minus the family's debt (Duncan & Peterson, 2001). Although income and assets are positively correlated, they are distinct types of financial resources. For example, Duncan and Peterson provide the example of elderly persons whose income is low but whose home equity is high due to their having paid off a mortgage and benefiting from rising home values. The most common form of assets in the U.S. is home equity.

Given that adults potentially have problems answering these questions, conventional wisdom is that students will not be able to answer these questions (see Hauser 1994; Entwisle & Astone, 1994). Response rates may be low and the validity of the responses may be suspect (Buchmann, 2002). Also, in cases such as TIMSS, asking about this information directly has been prohibited (Buchmann, 2002). This has led researchers to develop proxies such as using free and reduced lunch which was mentioned earlier. Another approach has been to measure family wealth through indices of home possessions (Buchmann, 2002). The list of possessions will be includes assets that are not necessarily educational resources, such as recreational vehicles and video cameras, for example. Using assets a indicator for wealth has a long theoretical history going back to Veblen's idea of Conspicuous Consumption (Veblen, 1899). These lists may be improved by adding a question about home ownership.

Aggregate Measures of SES

Given the problems that students may have in answering SES questions, and that parents often can not be queried either due to cost or concerns about obtrusiveness, another way of measuring SES needs to be considered. Ideally, SES measures for students participating in NAEP or other assessments could be collected unobtrusively from a secondary data source without troubling students or their parents. Unfortunately, such a data source is not available at the individual level. Though individual level data is unavailable, aggregated data from a secondary source can be used as a proxy for the household SES of sampled students in assessments. Entwisle and Astone (1994) suggest using this method for finding home prices and Kurki and her colleagues (2005) have attempted to use this to measure poverty levels, but this approach can be used to gather other SES information as well.

Aggregate measures of SES have both conceptual and methodological advantages over individual or household indicators in certain studies. Conceptually, they enable the researcher to account for environmental factors that operate beyond the individual and that influence the distribution of resources. For example, the rate of poverty in a neighborhood may affect the life chances of individuals in a community independently of household poverty rates, as the aggregate indicator can serve as a proxy for the general level of safety and well-being in the neighborhood (Krieger et al., 1997). Methodologically, aggregate measures are often preferred because of the difficulty of collecting SES data, especially concerning income, from respondents.

Scholars can select from a variety of aggregate levels of varying sizes. With Census data, the tract level contains an average of 4,000 residents, the block group an average of 1,000, and the block an average of about 85 residents. Though smaller levels of aggregation may be preferred, little SES data is collected at the block unit in order to protect the confidentiality of

respondents (Krieger et al., 1997). Depending on the level of aggregation, the researcher can select from a range of aggregate SES indicators pertaining to educational attainment, occupational status, and financial resources.

One of the problems with using aggregate proxies is that comparisons of individual SES indicators with their aggregate-level proxies have revealed that the latter are not as precise as the former (Geronimus & Bound, 1998; Soobader et al., 2001). Interestingly, smaller levels of aggregation do not necessarily reduce their bias, nor is the bias systematically oriented upward or downward. For example, in a study evaluating health outcomes, Soobader et al. (2001) concluded that tract-level assessments of income underestimated income to a greater extent than those based on postal codes. Yet for education, the zip codes evidenced a greater bias than both the tract and block group. Clearly, more research is necessary in order to determine the degree to which aggregate-level measures either understate or overstate individual measures of SES, as well as how these biases can best be managed.

As indicated, one of the benefits of the Census measures in comparison to the current NAEP SES measures is that these measures cover more facets of the SES domain, and indeed, cover all of the three key constructs the literature indicates as important. Figure 1 presents a comparison of the measures currently in NAEP and the proposed aggregate measures. As demonstrated in Figure 1, there are noticeable gaps in the measurement of the key SES constructs on NAEP. NAEP measures do not represent all of the SES constructs identified in the literature as important. Noticeably lacking is any measure of occupational status.

In addition, the scope of the current measures is limited in regard to their coverage of the SES constructs of educational attainment, and financial resources. Besides its other problems, use of the measure “eligibility for free and reduced price lunch” allows researchers to make

inferences about students whose family income is below the threshold, however, given that the range of incomes above the point of eligibility is extensive, little can be inferred about this population. For example, if one wanted to determine whether the increase in achievement by income is a linear one, this can not be fully assessed with the current measure. The range of questions that can be answered increases dramatically with the addition of family income, and assets as measures of financial resources

Similarly, Census data provide information about a greater range of educational outcomes than the current NAEP measures of parents' educational attainment. The current measures on NAEP provide information about whether parents have less than a high school education, completed high school, have some education after high school, or if they graduated from college. The Census asks about educational attainment in finer detail, asking about what grades were completed if a person did not receive a high school diploma, and then asks about degrees other than a college degree, such as graduate degrees and associates degree. The number of research questions that can be answered increased with the increase in information. This level of detail would allow researchers to investigate whether, for example, there are differences in achievement between students whose parents have associates degrees in comparison to students whose parents have high school diplomas, or if it is only a four year degree that makes a difference.

Census data could also be used in conjunction with data from individual students, thereby providing additional information that students may be unable to provide. On international surveys it could be possible to supplement current SES measures with information from international census data, though access and the information collected may vary from country to country.

Figure 1. SES Measures

	Current NAEP Measures	Aggregate Measures	Current TIMSS Measures
Educational Attainment	<ul style="list-style-type: none"> •How far in school did your father go? •How far in school did your mother go? 	<ul style="list-style-type: none"> •% of Census tract that has earned various degrees •HS diploma •BA •Etc. 	<ul style="list-style-type: none"> •How far in school did your father go? •How far in school did your mother go?
Occupational Status		<ul style="list-style-type: none"> % of Census tract in each: •Employment status •Occupation •Industry •Class of worker 	
Financial Resources	<ul style="list-style-type: none"> •% eligible for National School Lunch Program (School Questionnaire) •Student eligibility for National School Lunch Program (Admin. Schedule) 	<ul style="list-style-type: none"> •Median family income •% of Census tract in income ranges •Median home value •Mortgage status 	<ul style="list-style-type: none"> • Do you have any of these items in your home?

Construct Validity

Given that the current measures of SES administered to students are often controversial and that new aggregate measures may not be reliable, further research is needed about the reliability and validity of the measurement of student SES, in particular of measurements that ask the students about their parents SES. Though as indicated earlier there is some indication that students ages 14 and 15 can answer occupational questions (Hauser, 1994; Adams & Wu, 2002).

The ability of students at other ages to answer these types of questions needs to be addressed. Similarly, the ability of students to answer questions about their parents' education and family wealth needs further assessment, as does the use of aggregate data. Though aggregate measures of SES and composites of SES measures have benefits compared to the current measures on some assessments, the construct validity of these measures as well as items that students would answer, needs to be assessed. Construct validity is the concept that a measure accurately represents the concept that it is intended to measure. The true test of construct validity would be to assess how well these measures "predict" or explain the variance in a criterion measure. Similar to the validity studies done for the occupational questions in PISA 2000, a study could be done using the responses of parents to a series of SES questions that measure the three key SES constructs: Educational attainment, occupational status, and financial resources. In an ideal world there would be a 1 to 1 correspondence, with the proposed measures explaining all the variance in the criterion measure. This is unlikely to happen with the aggregate data since they are at a different level of analysis than the parental responses. However, the aggregate measures can be considered an improvement over the current measures if they explain *more* of the variance than the current NAEP measures. Similarly, if new items, such as additions to the assets list, are added they will need to be proven valid so that they may warrant wider inclusion.

Conclusions

Though the study of the measurement of socioeconomic status has a long history within sociology, today's educational climate presents unique measurement needs that haven't been thoroughly addressed by researchers. Though there is consensus on what factors make up SES, there is little guidance in the literature about what questions should be asked of students, and

when there is guidance, there is little proof about the ability of students to answer the questions. The use of Census data provides a promising alternative to asking students directly and an appealing alternative in the face of concerns over confidentiality and obtrusiveness. Extensive testing of the validity of these items and any composite measures that are created is needed. From this testing standards may be able to be created or “rules of thumb” that can help practitioners who have to balance the need for valid data with concerns about the obtrusive nature of SES questions.

References

- Adams, Ray and Margaret Wu, Eds. 2002. *PISA 2000 Technical Report*. Paris: Organisation for Economic Co-operation and Development.
- Baer, Justin, Stéphane Baldi, and Stacey S. Merola. 2005. “The Measurement of Socioeconomic Status (SES) in the Social Sciences: A Review to Inform NAEP.” Unpublished paper prepared for the National Center for Education Statistics.
- Blau, Peter M. and Otis D. Duncan. 1967. *The American Occupational Structure*. New York: Wiley.
- Buchmann, Claudia. 2002. “Measuring Family Background in International Studies of Education: Conceptual Issues and Methodological Challenges.” Pp. 150-197 in *Methodological Advances in Cross-National Surveys of Educational Achievement*. The National Academy of Sciences. Washington, DC: National Academy of Sciences.
- Duncan, G. J., & Petersen, E. 2001. The long and short of asking questions about income, wealth, and labor supply.” *Social Science Research*, 30 (2), 248-263.
- Dunteman, George H. 1987. *Principal Components Analysis*. Sage University Paper Series on Quantitative Applications in the Social Sciences, No. 69. Newbury Park, CA: Sage.
- Geronimus, Arline T. and John Bound. 1998. “Use of Census-Based Aggregate Variables to Proxy for Socioeconomic Group: Evidence From National Samples.” *American Journal of Epidemiology*. 148 (5): 475-86.
- Hauser, R. M. 1994. Measuring socioeconomic status in studies of child development. *Child Development*, 65, 1541-1545.

- Hauser, Robert M. and Deborah Carr. 1995. "Measuring Poverty and Socioeconomic Status in Studies of Health and Well-Being". Unpublished manuscript. Institute for Research on Poverty, University of Wisconsin-Madison.
- Hauser, Robert M. and John Robert Warren. 1997. "Socioeconomic Indexes for Occupations: A Review, Update, and Critique." *Sociological Methodology*. 27: 177-298.
- Institute for Social Research. 2002. *Panel Study of Income Dynamics, 2001 Family Questionnaire*. Ann Arbor, Michigan: University of Michigan, Institute for Social Research. Available on the ISR website at:
<ftp://ftp.isr.umich.edu/pub/src/psid/questionnaires/q2001.pdf>
- Krieger, N. D., R. Williams, and N. E. Moss. 1997. "Measuring Social Class in US Public Health Research: Concepts, Methodologies, and Guidelines." *Annual Review of Public Health*. 183: 41-78.
- Krieger, Nancy, Jarvis T. Chen, Pamela D. Waterman, Mah-Jabeen Soobader, S.V. Subramanian, and Rosa Carson. 2002. "Geocoding and Monitoring of US Socioeconomic Inequalities in Mortality and Cancer Incidence: Does the Choice of Area-based Measure and Geographic Level Matter?" *American Journal of Epidemiology*. 156 (5): 471-482
- Kurki, Anja, Andrea Boyle, and Daniel K. Aladjem. (2005) "Beyond Free Lunch – Alternative Poverty Measures in Educational Research and Program Evaluation." Paper presented at the Annual Meetings of the American Educational Research Association. Montreal, Canada
- May, Henry. 2003. "Development and Evaluation of an Internationally Comparable Scale of Student Socioeconomic Status Using Survey Data From TIMSS." Ph.D. Dissertation, Graduate School of Education, University of Pennsylvania, Philadelphia, PA.
- Mueller, W., & Karle, W. 1993. "Social selection in educational systems in Europe. *European Sociological Review*, 9, 1-23.
- National Assessment Governing Board, US Department of Education. 2003. *Background Information Framework for the National Assessment of Educational Progress*. Available at the National Assessment Governing Board Website: www.nagb.org
- National Center for Education Statistics (NCES). 2001. *Early Childhood Longitudinal Study: Kindergarten Class of 1998-99: Base year public-use data files user's manual (NCES 2001-029)*. Washington, DC: U.S. Government Printing Office.
- National Opinion Research Center. 2004. *General Social Survey, 1972-2000 Codebook*. Chicago, National Opinion Research Center. Available on the General Social Survey website at: <http://webapp.icpsr.umich.edu/GSS/>

- Nam, C B. (2000). *Comparison of three occupational scales*. Available from the Center for the Study of Population, University of Florida, Gainesville.
- Rhode Island Department of Elementary and Secondary Education (2004). *Rhode Island School and District Accountability System Technical Bulletin*. Retrieved on May 5, 2005, from http://www.ridoe.net/assessment/NEWS/Accountability_Technical_Bulletin_2004_FINAL.pdf
- Sewell, W.H., Haller, A.O., and Portes, A. 1969. "The educational and early occupational attainment process. *American Sociological Review*. 34, 82-92
- Smith, Tom. 1994. "Some Aspects of Measuring Education." *General Social Survey Methodological Reports: Methodological Report 83*. Chicago: The National Opinion Research Center.
- Soobader, Mah-jabeen, Felicia B. LeClere, Wilbur Hadden, and Brooke Maury. 2001. "Using Aggregate Geographic Data to Proxy Individual Socioeconomic Status: Does Size Matter?" *American Journal of Public Health*. 91 (4): 632-363.
- UNESCO. 1997. *International Standard Classification of Education (ISCED-1997)*. Paris: UNESCO.
- U.S. Department of Commerce, Census Bureau. 2000. *United States Census 2000 Long Form Questionnaire*. Available on the Census Bureau's website at: <http://www.census.gov/dmd/www/pdf/d02p.pdf>
- Veblen, Thorstein. 1899. *The Theory of the Leisure Class*. New York: London: The Macmillan Company.